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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,157	11/03/2003	Christopher J. Thompson	CTHO-2	3820

7590 11/30/2005

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2884

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/700,157	THOMPSON ET AL.	
	Examiner	Art Unit	
	Shun Lee	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are also objected to as failing to comply with 37 CFR 1.84(p)(4) because:

(a) reference character "12" has been used to designate both patient section and inorganic scintillator;

(b) reference character "14" has been used to designate both source and position and

(c) reference character "63" has been used to designate both piece and anode.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either

"Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because: (a) they do not include the following reference sign(s) mentioned in the description: 32; and (b) they include the following reference character(s) not mentioned in the description: 21. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. In addition, the drawings are objected to because of the reasons indicated on PTO-948. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The abstract of the disclosure is objected to because of the language. Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities:

- (a) on pg. 16, "anode signals 64" in line 21 should probably be --anode signals 65--
(37 CFR 1.84(p)(4));
- (b) on pg. 17, "photo-multiplier 63" in line 4 should probably be --photo-multiplier 64--
(37 CFR 1.84(p)(4)); and
- (c) on pg. 17, "scintillator 65" in line 4-5 should probably be --scintillator cylinder 52--
(37 CFR 1.84(p)(4)).

Appropriate correction is required.

8. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

9. Claims 3, 8, and 10-12 are objected to because of the following informalities:
- (a) in claim 3, "surrounded by a medium" on line 2 should probably be --surrounded by the means of detecting, and producing a signal, wherein the means of detecting, and producing a signal is a medium--;
 - (b) in claim 8, "may remain" on line 2 should probably be --remains--;
 - (c) in claim 10, "the source includes" on lines 1-2 should probably be --the medium is--;
 - (d) in claim 11, "the seller" on line 1 should probably be --the cylinder--; and
 - (e) in claim 12, "the source includes" on lines 1-2 should probably be --means of converting the detection into an electronic timing signal is--.

Appropriate correction is required

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by McCroskey *et al.* (US 5,841,140).

In regard to claim 1, McCroskey *et al.* disclose (Fig. 12) a time alignment system for a scanner comprising:

- (a) a radioactive source (120);
- (b) means (head 1) of detecting, and producing a signal (*i.e.*, triggering timing signal H1) at the time of radioactive decay of the source (120); and
- (c) means (73) of converting the signal (H1) into a common reference clock for calibration of the scanner (column 26, line 1 to column 28, line 50).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCroskey *et al.* (US 5,841,140) in view of Luitwieler *et al.* (US 4,060,726).

In regard to claim 2 which is dependent on claim 1, while McCroskey *et al.* also disclose (column 26, lines 8-13) that the radioactive source emits positrons, the system of McCroskey *et al.* lacks that the radioactive source has a half-life longer than six months. Luitwieler *et al.* teach (column 7, lines 7-10) to provide a radioactive source having a relatively long half-life, in order maintain constant counting statistics over the expected lifetime of the associated instrument. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a radioactive source having a half-life longer than six months in the system of McCroskey *et al.*, in order to maintain constant counting statistics over the expected lifetime of the associated system.

In regard to claim 3 which is dependent on claim 2, the system of McCroskey *et al.* lacks that the radioactive source is surrounded by a medium capable of detecting when the source decays by positron emission and before the positron combines with an electron and they annihilate subsequently producing two gamma rays

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which may be detected by the scanner's detectors. However, McCroskey *et al.* also disclose (column 4, lines 46-53) that the positron emitting isotope is detected by a conventional scintillator coupled to a PMT. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to insert the positron emitting isotope into a scintillator coupled to a PMT in the system of McCroskey *et al.*, in order to detect when the source decays by positron emission.

In regard to claim 4 which is dependent on claim 3, McCroskey *et al.* also disclose (column 4, lines 46-53) that the medium is coupled to means of converting the detection into an electronic timing signal.

In regard to claim 5 which is dependent on claim 4, McCroskey *et al.* also disclose (column 26, line 1 to column 28, line 50) that the timing signal is used as a timing reference for the scanner's gamma ray detectors.

In regard to claim 6 which is dependent on claim 5, McCroskey *et al.* also disclose (column 26, line 1 to column 28, line 50) that the timing reference serves as a system clock during the timing alignment of all the detectors such that they may all aligned to this common reference clock.

In regard to claim 7 which is dependent on claim 6, McCroskey *et al.* also disclose (column 26, line 1 to column 28, line 50) that all the scanner's gamma ray detectors may be aligned simultaneously to the common system clock.

15. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCroskey *et al.* (US 5,841,140) in view of Luitwieler *et al.* (US 4,060,726) as applied to claim 7 above, and further in view of Hamill *et al.* (US 6,774,358).

In regard to claims **8-11** which are dependent on claim 7, the modified system of McCroskey *et al.* lacks that the source may remain stationary near the center of the scanner during the alignment procedure, and that the source includes a layer of a positron emitting isotope placed on an inner surface of a plastic scintillator cylinder comprised of two pieces which are fixed together. Hamill *et al.* teach (column 5, line 18 to column 6, line 46) to position a radioactive source within an attenuating cylindrical holder near the center of the scanner, in order to obtain similar count rates from all detectors. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to position a radioactive source as a layer within an attenuating (e.g., two piece plastic scintillator) cylindrical holder near the center of the scanner in the modified system of McCroskey *et al.*, in order to obtain similar count rates from all detectors.

In regard to claims **12** and **13** which are dependent on claim 11, McCroskey *et al.* also disclose (column 4, lines 46-53) a photomultiplier coupled to the scintillator, wherein the photomultiplier has an anode output which produces the signal whose amplitude is proportional to the energy.

In regard to claim **14**, McCroskey *et al.* in view of Luitwieler *et al.* and Hamill *et al.* is applied as in claim 8 above.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL


CONSTANTINE HANNAHER
PRIMARY EXAMINER